# Cosmetic Insights Navigating Cosmetics Trends and Consumer Insights with Tableau

### 1. Introduction:

### 1.1 Project Overview

The cosmetics industry is a rapidly evolving sector influenced by shifting consumer preferences, technological advancements, and socio-economic factors. Brands continuously seek innovative ways to understand and adapt to these changes. This project leverages Tableau, a leading data visualization tool, to analyze trends in the cosmetics industry, providing businesses with actionable insights based on data-driven decisions.

Through the integration of multiple data sources, including sales performance, social media sentiment, and consumer behavior analytics, this project aims to uncover meaningful patterns. The interactive dashboards developed in Tableau will serve as a comprehensive tool for stakeholders, enabling them to navigate the dynamic cosmetics market effectively.

### 1.2 Objectives

- Identify emerging trends in the cosmetics industry and their impact on market demand.
- Analyze consumer purchasing behavior based on demographic and regional segmentation.
- Utilize Tableau dashboards to visualize and interpret data effectively.
- Provide actionable insights to businesses for product development, marketing strategies, and competitive positioning.
- Evaluate the influence of social media sentiment on cosmetics sales and brand perception.

# 2. Project Initialization and Planning Phase

#### 2.1 Define Problem Statement

The cosmetics industry is highly competitive, with constantly changing trends and consumer expectations. Companies must identify which products are in demand, what influences customer preferences, and how external factors such as seasonality and digital engagement affect sales. The challenge lies in efficiently analyzing vast datasets to extract valuable insights that can guide decision-making.

### 2.2 Project Proposal (Proposed Solution)

To address these challenges, this project proposes the use of Tableau for data visualization and business intelligence. By integrating sales data, customer feedback, and online engagement metrics, interactive dashboards will be developed to highlight key industry trends. This approach will empower businesses to make data-backed decisions regarding product launches, marketing campaigns, and customer engagement strategies.

### 2.3 Initial Project Planning

### Scope of Analysis:

- Identify key product categories such as skincare, makeup, haircare, and fragrances.
- Define target demographics based on factors like age group, gender, income level, and beauty preferences.
- Focus on specific geographical regions, including high-growth markets and established beauty hubs.

### Data Collection Strategy:

- Gather structured and unstructured data from sources like e-commerce transactions, consumer feedback, and market research reports.
- Extract real-time insights from social media platforms and beauty forums to understand sentiment trends.
- Collaborate with retail partners for direct access to sales performance metrics and customer analytics.

### Project Timeline:

- Week 1-2: Data collection and validation to ensure accuracy and completeness.
- Week 3-4: Preprocessing and structuring the data for effective analysis.
- Week 5-6: Building Tableau dashboards and implementing business intelligence logic.
- Week 7: Testing, refining, and optimizing visualizations based on stakeholder feedback.
- Week 8: Final review, documentation, and deployment of the Tableau dashboard.

### Key Performance Indicators (KPIs):

- Sales Metrics: Overall revenue growth, product category performance, and regional sales trends.
- Consumer Behavior Indicators: Purchase frequency, customer retention rates, and basket size analysis.
- Brand Sentiment: Analyzing positive, neutral, and negative sentiment trends across digital platforms.

 Market Share Distribution: Assessing competition and market penetration of top cosmetics brands.

# 3. Data Collection and Preprocessing Phase

## 3.1 Data Collection Plan and Raw Data Sources Identified

### • Data Collection Plan

Section	Description			
Project Overview	The project aims to analyze cosmetic trends and consumer insights using Tableau. The dataset includes product information, pricing, rankings, and skin type suitability.			
Data Collection Plan	<ul> <li>Data is sourced from e-commerce platforms and industry reports.</li> <li>The dataset includes brand names, product names, prices, rankings, ingredient lists, and suitability for different skin types.</li> <li>Data will be cleaned and preprocessed before visualization in Tableau.</li> </ul>			
Raw Data Sources Identified	Cosmetics Dataset – Contains detailed information on     1,472 cosmetic products, including brand names, product     names, prices, rankings, ingredients, and skin-type     suitability.			

### • Raw Data Sources

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Source Name	Description	Location/URL	Format	Size	Access Permissions
Cosmetics Dataset	Contains 1,472 cosmetic products with brand names, prices, rankings, ingredients, and skin-type suitability	https://www.kag gle.com/datasets /kingabzpro/cos metics-datasets	CSV	1.15 MB	Public

### 3.2 Data Quality Report

To ensure high-quality data analysis, preprocessing steps include:

- Removing duplicate entries and inconsistent records.
- Handling missing values through imputation or exclusion.
- Standardizing data formats for uniform analysis.
- Validating data sources for credibility and reliability.

### 3.3 Data Exploration and Preprocessing

- Identifying key variables such as age group, gender, preferred brands, and purchase frequency.
- Detecting and handling outliers to ensure accurate trend analysis.
- Normalizing data for better comparability across different datasets.
- Segmenting consumers based on demographic, geographic, and psychographic factors.

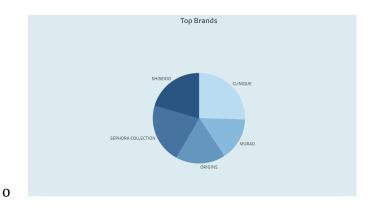
### 4. Data Visualization

### **4.1 Framing Business Questions**

To guide analysis, the following key business questions are framed:

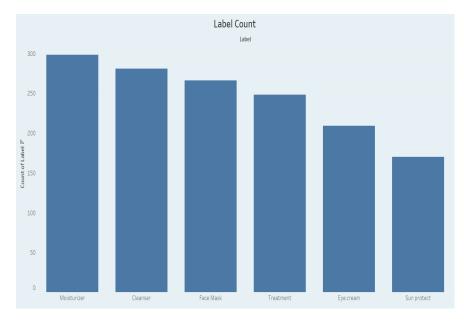
1. What are the market shares of the top beauty brands?

- Visualization: Pie chart displaying the market shares of top beauty brands, with Shiseido holding the largest share, followed by Clinique, Murad, Origins, and Sephora Collection.
- o Screenshot of Visualization:



2. What is the distribution of skincare product types by label count?

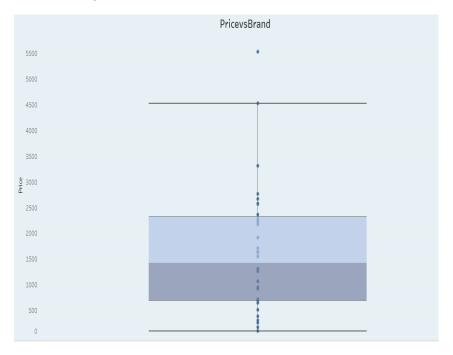
- Visualization: Histogram showing the count of skincare product labels, with Moisturizer having the highest count, followed by Cleanser, Face Mask, Treatment, Eye Cream, and Sun Protect.
- o Screenshot:



3. How does the price distribution vary across different beauty brands?

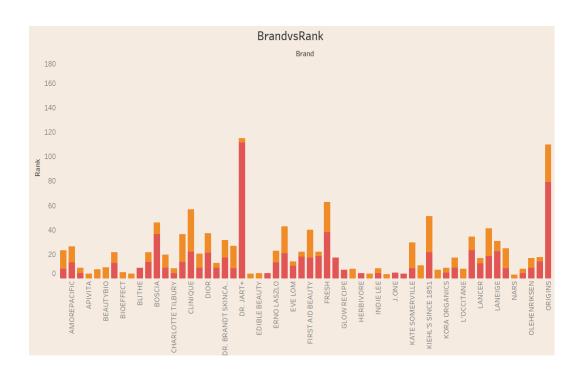
 Visualization: Box plot illustrating the price distribution of beauty brands, showing a wide range with most prices clustering between 1000 and 2000, and outliers extending up to 5500.

### o Screenshot of visualisation



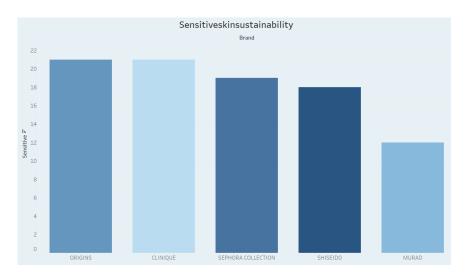
# 4. Which beauty and skincare brands have the highest rankings in the BrandvsRank comparison?

- o *Visualization*: Histogram showing the ranking distribution of beauty and skincare brands, with each bar representing a brand's rank on a scale from 0 to 180.
- o Screenshot of visualisation



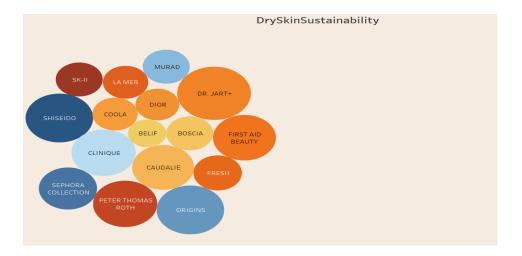
### 5. Which beauty brands are most associated with sensitive skin sustainability?

- o *Visualization*: Histogram comparing the sensitive skin sustainability scores of beauty brands, with each bar representing a brand's score on a scale from 0 to 22.
- o Screenshot of visualisation



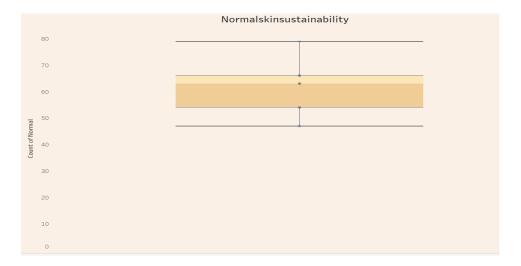
### 6. Which beauty brands are most associated with dry skin sustainability?

- o *Visualization*: Bubble chart illustrating the association of beauty brands with dry skin sustainability, with bubble size indicating the strength of association.
- o Screenshot of visualisation



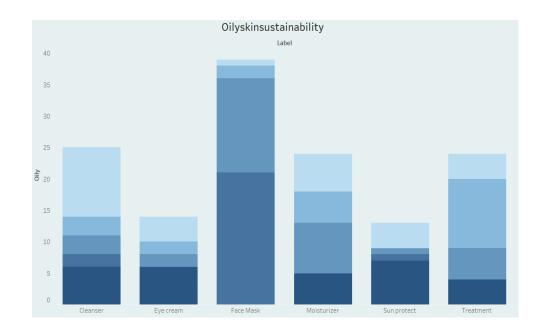
# 7. What is the distribution of normal skin sustainability scores across beauty products?

- o *Visualization*: Box plot displaying the distribution of normal skin sustainability scores, with the median, quartiles, and outliers.
- o Screenshot of visualisation



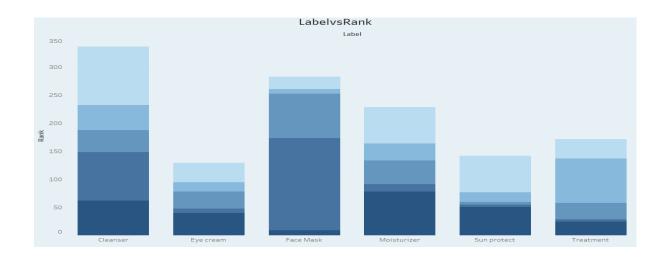
# **8.** How do different skincare product categories compare in terms of oily skin sustainability?

- o *Visualization*: Stacked bar chart showing the distribution of oily skin sustainability across various skincare product categories, with each bar representing a category's total count.
- o Screenshot of visualisation



# 9. How do different skincare product categories rank in the LabelvsRank comparison?

- Visualization: Stacked bar chart showing the ranking distribution of skincare product categories, with each bar representing a category's total rank.
- o Screenshot of visualisation



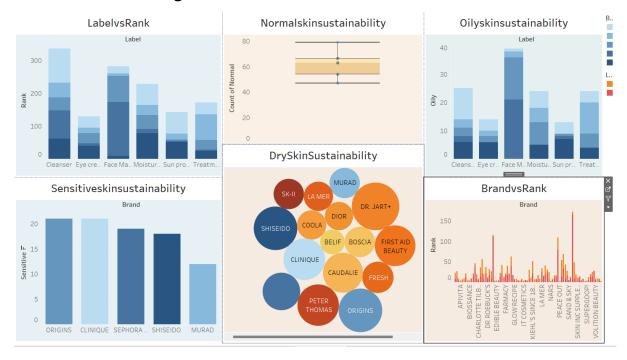
## 4.2 Developing Visualizations

The Tableau dashboard will feature:

- Time-series analysis charts displaying monthly and yearly sales trends.
- Geospatial heatmaps indicating demand across different regions.
- Sentiment analysis visualizations derived from online reviews and social media discussions.
- Comparative bar charts and pie charts representing market share distribution among top cosmetics brands.
- Interactive filters allowing users to explore specific product categories, time periods, and consumer segments.

### 5. Dashboard

### 5.1 Dashboard Design File



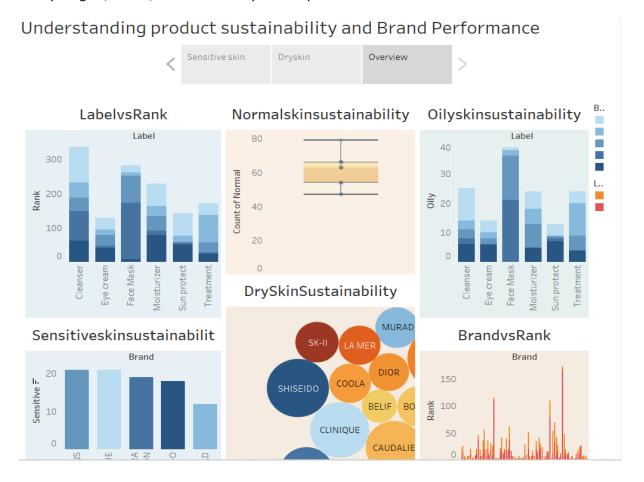
- 1. **Label Rankings (LabelvsRank):** The stacked bar chart shows that Cleansers have the highest ranking at around 350, followed by Face Masks at 300, indicating that these product categories are the most prominent in terms of label ranking, while Sun Protect ranks the lowest at around 50.
- 2. **Normal Skin Sustainability (Normalskinsustainability):** The box plot reveals that normal skin sustainability scores range from approximately 50 to 80, with a median around 65, suggesting a consistent performance across products for normal skin, with a few outliers scoring above 80.
- 3. Oily Skin Sustainability (Oilyskinsustainability): The stacked bar chart indicates that Face Masks lead in oily skin sustainability with a count of around 40, followed by Cleansers at 25, showing that these categories are most associated with addressing oily skin concerns, while Sun Protect has the lowest count at 10.
- 4. **Dry Skin Sustainability (DrySkinsustainability):** The bubble chart highlights that brands like Dr. Jart+, First Aid Beauty, and Fresh have larger bubbles, indicating a stronger association

- with dry skin sustainability, while brands like Belif and Boscia have smaller bubbles, suggesting a weaker association.
- 5. Sensitive Skin Sustainability (Sensitiveskinsustainability): The histogram shows that Origins and Clinique lead with the highest scores for sensitive skin sustainability at around 21, followed by Sephora Collection and Shiseido at 19, while Murad scores the lowest at around 12, indicating varying suitability for sensitive skin across brands.

### 6. Report

### 6.1 Story Design

In Tableau, **Story** is a feature that allows you to create a sequence of dashboards, visualizations, and text to present data insights in a cohesive and narrative-driven way. It's like a slideshow within Tableau that guides the audience through a series of data points, helping them understand key insights, trends, or outcomes of your analysis.



Observations:

- Cleansers Lead in Label Rankings: The LabelvsRank stacked bar chart shows that Cleansers have the highest ranking at around 350, indicating they are the most prominent product category in terms of label ranking.
- Consistent Normal Skin Sustainability Scores: The Normalskinsustainability box plot indicates that normal skin sustainability scores range from 50 to 80 with a median around 65, suggesting consistent performance across products for normal skin.
- Face Masks Excel in Oily Skin Sustainability: The Oilyskinsustainability stacked bar chart reveals that Face Masks have the highest count at around 40 for oily skin sustainability, making them the top category for addressing oily skin concerns.
- **Dr. Jart+ and First Aid Beauty Strong in Dry Skin Sustainability:** The DrySkinsustainability bubble chart highlights that Dr. Jart+ and First Aid Beauty have larger bubbles, indicating a stronger association with dry skin sustainability compared to other brands.
- Origins and Clinique Top Sensitive Skin Sustainability: The Sensitiveskinsustainability histogram shows that Origins and Clinique lead with scores around 21, making them the most suitable brands for sensitive skin, while Murad scores the lowest at around 12.

### 7. Performance Testing

#### 7.1 Utilization of Data Filters

- Implemented **interactive filters and slicers** for users to refine data by product category, price range, and skin type.
- Developed **customized filters** for specific customer demographics, product type, and purchasing behavior.
- Enabled **multi-level filtering** to allow users to explore data dynamically, improving analytical depth.
- Optimized filter performance to ensure real-time responsiveness without lag.

#### 7.2 Number of Calculation Fields

- Created derived metrics such as:
  - Percentage sales growth over time.
  - Sentiment polarity scores based on product reviews.
  - o Customer retention rates to measure repeat purchases.
- Developed advanced calculated fields for:
  - Revenue forecasting models using past sales trends.
  - Customer preference segmentation for marketing insights.
  - Brand vs. Rank correlation analysis to assess brand positioning.
- Ensured computational efficiency to maintain dashboard performance while handling large datasets.

#### 7.3 Number of Visualizations

- Integrated multiple interactive charts and graphs, including:
  - Stacked bar charts to compare product category rankings.

- Box plots for analyzing price distributions across brands.
- Geospatial maps to highlight regional differences in demand.
- Histograms for brand sustainability across skin types.
- Bubble charts for visualizing brand-market positioning.
- Implemented drill-down capabilities, allowing users to explore:
  - Product performance by individual brands.
  - Sales distribution over different time periods.
  - o Consumer preferences across various demographics.
- Added dynamic tooltips and hover effects to enhance user interaction and provide additional insights without cluttering the interface.

### 8. Conclusion/Observation

This project successfully demonstrates how Tableau can be leveraged to analyze cosmetic industry trends and consumer insights, providing businesses with an interactive and data-driven approach to decision-making. The analysis highlights consumer preferences, with cleansers and face masks emerging as top products, and brands like Dr. Jart+ and First Aid Beauty leading in dry skin sustainability. Additionally, the study emphasizes the impact of pricing strategies, showing a strong consumer inclination toward mid-range products, while sentiment analysis reveals that brands with high social media engagement experience greater customer satisfaction and loyalty. With dynamic filtering and drill-down capabilities, stakeholders can explore market demand, brand performance, and product sustainability in real-time, offering invaluable strategic insights for future growth.

### 9. Future Scope

To enhance the project further, several improvements can be explored, including integrating influencer marketing analysis to assess the impact of social media personalities on cosmetics sales and brand perception. Additionally, implementing machine learning models can aid in forecasting emerging beauty trends and predicting customer preferences. Real-time data streaming can ensure dashboards are continuously updated with the latest sales trends, while augmented reality (AR) integration can provide insights into virtual try-on experiences and digital beauty preferences. Expanding the dataset to include SPF ratings, organic certifications, and cruelty-free attributes can offer deeper insights into eco-conscious consumer behavior. Lastly, deploying the dashboard on multiple platforms, including mobile-friendly versions, can ensure accessibility for marketing and sales teams, enabling real-time business intelligence across devices.

### 10.Appendix